ORIGINAL ARTICLE

FACTORS ASSOCIATED WITH THE INITIATION OF ALCOHOL, PSYCHOPHARMACEUTICALS AND OTHER PSYCHOACTIVE SUBSTANCE USE DURING THE COVID-19 PANDEMIC

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Highlights: (1) One in four university members initiated substance use during COVID-19 pandemic. (2) Psychopharmaceuticals were the most frequently initiated substances. (3) Alcohol initiation was linked to domestic violence and living with peers. (4) Students and younger individuals had higher illicit substance initiation. (5) Psychosocial vulnerabilities influenced substance use during pandemic.

http://dx.doi.org/10.21527/2176-7114.2026.51.15415

How to cite:
Baptista CJ, Escalda PMF, Martins AM, Bittencourt MN, Chaves MR de C. Factors associated with the initiation of alcohol, psychopharmaceuticals and other psychoactive substance use during the covid-19 pandemic. Rev. Contexto & Saúde. 2026;26(51):e15415

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FACTORS ASSOCIATED WITH THE INITIATION OF ALCOHOL, PSYCHOPHARMACEUTICALS AND OTHER PSYCHOACTIVE SUBSTANCE USE DURING THE COVID-19 PANDEMIC

ABSTRACT

The emerging crisis of the COVID-19 pandemic brought several challenges related to mental health. As a response to this sudden situation, the general population may have presented psychological symptoms, including the use of psychoactive substances. This study aimed to identify factors associated with the initiation of alcohol, psychopharmaceuticals, and/or other psychoactive substance use during the pandemic. This was a cross-sectional observational study conducted between April and September 2021 with 2,469 participants (students, professors, and staff) from four federal universities located in the Central-West region of Brazil. Logistic regression analysis was performed to estimate odds ratios. Overall, approximately one-quarter of participants reported initiating substance use during the COVID-19 pandemic. Psychopharmaceuticals were the most frequently reported substances among both students and professors/staff, followed by alcohol. Among students, the initiation of alcohol use was associated with living with friends/roommates, belonging to a risk group for severe COVID-19 illness, and having experienced domestic violence during social distancing measures. Different individual and social factors were associated with the initiation of substance use during the pandemic, with younger age and student status being related to the onset of illicit substance use.

Keywords: COVID-19, Psychopharmaceuticals, Substance use, Universities, Mental health.

FATORES ASSOCIADOS AO INÍCIO DO USO DE ÁLCOOL, PSICOFÁRMACOS E OUTRAS SUBSTÂNCIAS PSICOATIVAS DURANTE A PANDEMIA DE COVID-19

RESUMO

A crise emergente da pandemia de COVID-19 trouxe muitos desafios relacionados à saúde mental. Como resposta para lidar com essa situação repentina, a população em geral pode apresentar sintomas psicológicos, incluindo o uso de substâncias psicoativas. Este estudo tem como objetivo identificar fatores associados ao início do uso de álcool, psicofármacos e/ou outras substâncias psicoativas durante a pandemia. Trata-se de um estudo observacional transversal realizado entre abril e setembro de 2021 com 2.469 participantes (alunos, professores e funcionários) de quatro universidades federais do Centro-Oeste brasileiro. Foi realizada regressão logística para estimar as razões de chances. No total, cerca de um quarto

dos participantes relatou ter iniciado o uso de substâncias durante a pandemia de COVID-19. Os psicofármacos foram as substâncias mais referidas tanto por alunos quanto por professores/funcionários, seguidos pelo álcool. Entre os estudantes, o início do uso de álcool foi associado a morar com amigos/colegas de quarto, pertencer ao grupo de risco para adoecimento grave por COVID-19 e ter sido vítima de violência doméstica durante as medidas de distanciamento social. Diferentes fatores individuais e sociais foram associados ao início do uso de substâncias em meio à pandemia, sendo que ser estudante e mais jovem esteve relacionado ao início do uso de substâncias ilícitas.

Palavras-chave: COVID-19, Psicofármacos, Uso de drogas, Universidades, Saúde mental.

INTRODUCTION

The novel coronavirus (SARS-CoV-2) emerged in late 2019, causing coronavirus disease (COVID-19) and rapidly becoming a major global health threat. By August 2022, more than 500 million confirmed cases and over 6 million deaths had been reported worldwide[1]. Beyond the direct health impacts, the COVID-19 pandemic also resulted in profound economic disruptions and losses[2], with cascading effects on mental health, particularly among vulnerable and high-risk groups[3].

The pandemic posed unprecedented challenges to mental health[4]. In an attempt to cope with this sudden crisis, the general population experienced psychological symptoms such as panic, phobia, anxiety, and sleep disturbances[5], as well as the use or misuse of psychoactive substances (PAS)[6]. At the same time, measures to contain the spread of the virus, such as physical and social isolation, disrupted daily routines and behavioral patterns, with consequences for short- and long-term mental health that are still not fully understood[7].

Social isolation itself has been considered a trigger for emotional distress, irritability, insomnia, and depression. Its impact extended to behavioral changes, such as increased alcohol misuse and reliance on psychotropic medication as coping strategies. Several studies suggest that many people resorted to alcohol, psychopharmaceuticals, and other substances to alleviate emotional suffering, given the depressant effects of PAS on the central nervous system[4,7].

International evidence highlights increased PAS use during the pandemic. In Poland, alcohol was the most consumed substance, with 14% of participants reporting increased intake[4]. In the United States, studies found higher rates of daily drinking and binge drinking, while a global survey of 70 countries revealed that more than two-thirds of participants reported increased alcohol consumption[8,10]. Other studies also pointed to rises in cannabis, prescription opioids, and sedatives use[8,9]. Younger adults, in particular, showed sharper increases in consumption, possibly as a strategy to cope with isolation, stress, and uncertainty[9].

Given that the initiation of substance use, particularly alcohol, psychopharmaceuticals, and illicit drugs, represents a major public health concern during the COVID-19 pandemic, this study aimed to analyze the factors associated with substance use initiation in quarantined university communities in Mid-West Brazil.

Study Design, Population, and Recruitment

An observational cross-sectional study was conducted between April and September 2021. Students, professors, and staff members from four federal universities in Mid-West Brazil were eligible to participate. Individuals who voluntarily agreed completed an online questionnaire. Due to social and physical distancing measures, recruitment was carried out exclusively online. Given the lockdown context, probabilistic sampling and sample size calculation were not applied; instead, a fixed data collection period was defined.

Data Collection and Tool

A self-administered questionnaire was developed using Google Forms. It included multiple-choice questions on sociodemographic characteristics, academic and work conditions, and psychoactive substance use during the pandemic. The questionnaire link was distributed via email to the university communities and made available on institutional websites, social media platforms, and newsletters. Participants were asked: *"Have you STARTED using any of these substances now, during the pandemic?"*. Response options included: "No," "Alcohol," and/or one or more categories of listed psychoactive substances. A prima facie exclusion criteria were age under 18 years and incomplete questionnaires.

Study Outcomes

The main outcome was the initiation of substance use during the COVID-19 pandemic. Outcomes were categorized as follows:

- Outcome 1: Alcohol (any alcoholic beverage)
- Outcome 2: Tobacco (cigarettes, hookah, cigars, etc.)
- Outcome 3: Psychopharmaceuticals (prescribed and/or non-prescribed**)**
- Outcome 4: Illicit substances (cannabis, cocaine, crack, synthetic drugs such as amphetamines, LSD, excluded ketamine, since it is a regulated medication and not classified as an illicit drug, anabolic steroids, etc.)

Each outcome was measured and analyzed separately. Participants indicated "yes" or "no" for each category.

Data Analysis

Few professors and staff reported starting to use tobacco (Outcome 2) or illicit substances (Outcome 4) (see Table 2); therefore, regression models were not built for these outcomes in this subgroup. To explore factors associated with substance use initiation during the COVID-19 pandemic, bivariate analyses were first performed using Pearson's Chi-squared test, with statistical significance set at 0.05.

Given the large number of covariates, a stepwise regression approach was applied to identify the most relevant subset of features for inclusion in multivariable logistic regression models, resulting in a parsimonious final models. Logistic regression was then performed to estimate adjusted odds ratios (aOR) with 95% confidence intervals (95% CI). Separate regression models were built for university students (Model 1) and professors/staff (Model 2).

Ethics Statement

The study protocol and informed consent form (ICF) were approved by the Brazilian National Research Ethics Commission (*Comissão Nacional de Ética em Pesquisa* – CONEP) under approval number 3.971.653/2021. Participation required online consent registration. Participants were encouraged to download the ICF for their personal records. To ensure

anonymity and confidentiality, the form did not require any identification from participants. Access to research data was restricted to the research team, and information management followed the guidelines of Resolution 466/2012 from the National Health Council/Ministry of Health.

RESULTS

Overall, 2,568 individuals accessed the online form and 2,469 (participation rate = 96.14%) agreed to participate, completed, and submitted the questionnaire. After excluding repeated entries, incomplete questionnaires, those without ICF registration, and participants younger than 18 years old, the final sample consisted of 2,298 participants (89.49%). Of these, 71.11% were female, 65.23% were aged 18–29 years (median = 24.0 years, mode = 21.0 years), with further subdivision into 18–23 years and 24–29 years, as recommended to better capture the profile of younger versus more mature students. The majority were students (79.59%), while 14.75% were professors and 5.66% were staff, and 49.61% self-identified as white. Table 1 shows more characteristics of the study population, such as comorbidities and health conditions that are considered risk factors for severe COVID-19 illness.

Table 1. Characteristics of university students, staff, and professors sampled during the COVID-19 crisis in four university communities in Mid-West Brazil, 2021.

Factor	Students n (%) Total = 1,829	Professors/Staff n (%) Total = 469
Gender	Female 1,327 (72.55)	307 (65.46)
	Male 485 (26.52)	162 (34.54)
	Other 17 (0.93)	–
Age group	[**18–23 years 847 (46.30)**]	[**8 (1.71)**]
	[**24–29 years 632 (34.55)**]	[**12 (2.56)**]
	30+ years 350 (19.14)	449 (95.74)
Race/skin color	Black/Pardo 937 (51.23)	168 (35.82)
	White 856 (46.80)	284 (60.55)
	Indigenous/Yellow 36 (1.97)	17 (3.63)
Educational level	Primary/Secondary 1,152 (62.99)	11 (2.35)
	University degree 567 (31.00)	76 (16.20)
	Master/PhD 110 (6.01)	382 (81.45)
Any religion	Yes 968 (52.93)	273 (58.21)
Marital state	Married/With partner 415 (22.69)	321 (31.56)
	Single 1,414 (77.31)	148 (68.44)
Risk group for severe COVID-19 illness	Yes 345 (18.86)	131 (27.93)
Cohabits	Family/Partner 1,398 (76.44)	378 (80.60)
	Friends/Roommates 164 (8.97)	1 (0.21)
	Lives alone 267 (14.60)	90 (19.19)
Leave of absence due to pandemic	Yes 272 (14.87)	20 (4.26)

Source: Author.

Overall, about one quarter (26.82%) of participants reported having initiated substance use during the COVID-19 pandemic. Table 2 shows the proportions by substance type, for students and for professors/staff. Psychopharmaceuticals were the most frequently reported in both groups, followed by alcohol, while illicit substances were the least frequent.

Table 2.

Proportions of participants reporting initiation of substance use during the COVID-19 pandemic, April–September 2021.

Substance	Students n % (95% CI)	Professors and Staff n % (95% CI)
Alcohol	243 – 13.29 (11.78–14.95)	31 – 6.61 (4.61–9.35)
Tobacco	129 – 7.05 (5.94–8.35)	8 – 1.71 (0.79–3.47)
Psychopharmaceuticals	313 – 17.11 (15.43–18.94)	77 – 16.42 (13.24–20.16)
Illicit substances	71 – 3.88 (3.06–4.90)	2 – 0.43 (0.07–1.70)

Source: Author.

Factors associated with substance use initiation

Table 3 presents factors statistically associated with substance use initiation during the pandemic from the multivariate analysis. Among students, starting alcohol use was associated with living with friends/roommates (95% CI: 1.03–2.32), belonging to a risk group for severe COVID-19 illness (95% CI: 1.21–2.33), and being a victim of domestic violence during social isolation measures (95% CI: 1.58–3.03). Among both students and professors/staff, facing financial/material hardship during social distancing and having a previous mental disorder diagnosis were associated with higher odds of initiating alcohol use.

With respect to illicit drugs, self-reporting a worsened emotional state was positively related to initiating all substances studied: alcohol (95% CI: 2.05–7.37), tobacco (95% CI: 1.67–9.38), and psychopharmaceuticals (95% CI: 2.14–6.77) among students. For professors/staff, worsened emotional state was only associated with initiating psychopharmaceuticals (95% CI: 2.49–35.03).

Students and professors/staff who requested or took a leave of absence due to the pandemic and self-rated their emotional state as worsened during social distancing were more likely to initiate psychopharmaceutical use. The same was observed among students and professors/staff who were victims of domestic violence (95% CI: 1.24–2.43 and 95% CI: 1.59–9.04, respectively) and those previously diagnosed with a mental disorder (95% CI: 7.32–13.05 and 95% CI: 1.83–6.39, respectively).

Students who reported practicing any religion were less likely to start using illicit substances (95% CI: 0.17–0.53). On the other hand, being aged 18–23 years (95% CI: 1.13–7.16), cohabiting with friends/roommates rather than with family/partner (95% CI: 1.28–4.48), and facing financial/material hardship during social distancing (95% CI: 1.73–4.82) were positively associated with initiating illicit substance use during the pandemic.

DISCUSSION

This study was conducted within university communities that had experienced physical and social distancing measures since the beginning of the COVID-19 pandemic. The

objective was to examine the initiation of alcohol, psychotropic, and other psychoactive substance use during the pandemic and to identify associated factors. Psychotropic drugs, followed by alcohol, were the most frequently reported by both students and professors/staff. Previous studies of university populations have also documented an increase in benzodiazepines, hypnotics, and serotonergic anxiolytics during the pandemic, often as strategies to mitigate symptoms aggravated by social distancing, such as changes in eating and sleeping patterns, anxiety, and mood disorders[10,11]. This is consistent with our findings, suggesting that the pandemic context may have accelerated the initiation of psychotropic medication use, not only for therapeutic purposes but also as a coping strategy.

Among professors and staff, substance use initiation during the pandemic was associated with requesting or taking a leave of absence, worsened emotional state, and experiences of domestic violence during "stay-at-home" mandates. Medication use often represents an attempt to reduce both physical and psychological suffering[10]. Considering that most of our sample consisted of women, and given evidence of increased domestic violence against women during the pandemic[12,13], it is plausible that psychotropic drug initiation reflected an effort to manage trauma-related or stress-induced symptoms. This highlights the intersection between gender-based violence and psychopharmacological coping strategies during crises.

In our study, students and younger participants were more likely to initiate illicit substance use. Prior research, both before[14] and during the pandemic[15,17], has indicated the heightened vulnerability of university populations to alcohol and illicit drug use, often as a means of relieving academic overload, uncertainty about the future, and subjective distress. A North American survey with over 1,400 participants, most holding postgraduate degrees, showed that 33% reported using psychoactive substances as a coping mechanism during the pandemic[18]. While higher education has traditionally been associated with protective factors against harmful substance use[19], the pandemic context appears to have weakened these buffers, particularly among students facing disrupted routines and reduced social support.

Among students, living with friends or roommates was associated with initiation of all substances studied except psychotropic drugs. Social interactions with peers are known to facilitate alcohol, tobacco, and illicit drug use[9,20], whereas living with family may act as a

protective factor by limiting access and opportunities to consume substances[20,21]. These findings reinforce the central role of the immediate social environment in shaping behavioral choices during crises.

Religiosity emerged as a protective factor against illicit substance use initiation. This supports evidence that religious practice can foster mental health by providing existential meaning, enhancing self-efficacy, and strengthening community networks[22,23]. Such networks may have been especially important during the pandemic, helping individuals maintain psychological resilience and access material resources.

The participant profile, predominantly students and self-identified as Black or mixed-race, highlights vulnerabilities linked to structural inequalities. Prior studies show that these populations experience disproportionate rates of psychological symptoms[24,25], which may heighten risk for substance use initiation. Social distancing mandates also produced economic consequences such as job loss and insecurity regarding housing, utilities, and food access[2,25]. These stressors may have compounded vulnerabilities, particularly for Black and mixed-race students, thereby intensifying psychological distress and leading to substance use as a maladaptive coping strategy[17,25].

Several studies, especially in developing countries, have found that social minorities, black, poor, and marginalized individuals, were more vulnerable to physical and mental suffering during the pandemic, mainly due to uncertainties in ensuring basic survival conditions [18,20,25,27]. In the same context, other studies have found an increase in the use of psychoactive substances among college students, particularly those from lower socioeconomic backgrounds [15,31,32].

The economic crisis generated by the pandemic had global repercussions. Evidence shows that individuals who lost jobs or experienced financial hardship during the pandemic were more likely to report substance use initiation[21]. Our findings reinforce this, showing that financial difficulties were strongly associated with substance use initiation. Economic disruption alters lifestyle, increases stress, and reduces access to protective resources, creating fertile ground for maladaptive coping strategies such as psychoactive substance use[4,25].

In addition, the pandemic was marked by a surge in domestic violence cases worldwide. Social distancing increased exposure to violent partners, exacerbating conflicts and, in some

cases, fueling substance use[26]. The relationship, however, is bidirectional: while exposure to violence increases the risk of initiating substance use, psychoactive drug use may also elevate the likelihood of violent episodes. Although our study design does not allow for causal inference, it is plausible that some individuals turned to psychotropic or other substances as a coping mechanism for violence-related distress, a pattern historically observed during periods of economic crisis and social instability[21].

Other researchers have highlighted that the impact of the pandemic was layered upon preexisting vulnerabilities, especially prior mental health conditions. The health emergency likely intensified psychological suffering for individuals who already experienced symptoms[17,27]. In line with this, our results show that a prior diagnosis of mental disorder and self-reported worsening emotional state were both associated with substance use initiation. This suggests that individuals sought psychoactive substances as self-medication to alleviate distress[4,17,28]. Social isolation in particular has been strongly linked to worsening depressive symptoms and suicidal ideation[29], which may help explain the associations observed in our study.

Despite its contributions, this study has limitations. Its cross-sectional design prevents establishing causal directionality, and the convenience sampling within four universities in Mid-West Brazil limits generalizability. Self-reported data are subject to recall and social desirability biases, possibly leading to underestimation of substance use initiation. Nevertheless, the large and diverse sample, including proportional representation of students, staff, and professors, strengthens the internal validity of the findings. Importantly, our results are consistent with international literature, highlighting the role of the pandemic in triggering or accelerating psychoactive substance use initiation, particularly psychotropic drugs and alcohol, within university communities.

Future studies could investigate the use of alcohol, psychotropic drugs, and other psychoactive substances in the years following the end of the Covid-19 pandemic to identify any changes in patterns. The findings could help understand how the conditions imposed by social distancing, combined with the academic and work pressures in universities, may have contributed to an increase or initiation of substance use, particularly among more vulnerable university's groups.

Table 3. Factors associated with reporting [initiation of] substance use during the COVID-19 pandemic, among university students (Model 1) and [university professors and staff] (Model 2), by substance group.

Factor	Model 1 - Alcohol (Outcome 1) a	Model 1 - Tobacco (Outcome 2) a	Model 1 - Medical drugs (Outcome 3) a	Model 1 - Illicit drugs (Outcome 4)	Model 2 - Alcohol (Outcome 1) a	Model 2 - Medical drugs (Outcome 3) a
Age group						
18–20 years			2.74 (1.13-7.16)			
21–29 years			1.66 (0.77-3.96)			
30+ years			-			
Marital status						
Married/Partner					-	
Single					3.90 (2.06-7.54)	
Any religion						
No			-			
Yes			0.31 (0.17-0.53)			
Requested leave of absence						
No	-	-	-	-	-	
Yes	1.69 (1.19-2.37)	2.06 (1.33-3.13)	2.05 (1.44-2.91)	2.30 (1.31-3.92)		12.48 (3.51-52.39)

Cohabits with				
Family/Partner	-	-	-	
Friends/Roommates	1.50 (1.03-2.32)	2.39 (1.41-4.96)	2.44 (1.28-4.48)	
Lives alone	0.97 (0.63-1.46)	1.35 (0.76-2.28)	0.85 (0.36-1.78)	
Time per day spent alone				
0 hour		-		
1–12 hours		1.91 (0.87-5.05)		
13–24 hours		2.32 (0.97-6.47)		
Self-rated emotional state				
No changes	-	-		-
Got better	1.52 (0.54-4.02)	0.76 (0.11-3.47)	3.12 (1.43-6.90)	3.12 (0.41-22.84)
Got worse	3.70 (2.05-7.37)	3.59 (1.67-9.38)	3.68 (2.14-6.77)	7.75 (2.49-35.03)
Academic/work performance				
No changes				-
Got better				0.89 (0.18-3.35)
Got worse				2.31 (1.10-5.11)
Risk group COVID-19				

No	-	-	-			
Yes	1.69 (1.21-2.33)	1.22 (0.78-1.88)	1.62 (1.16-2.26)			
Financial hardship						
No	-	-		-	-	
Yes	1.56 (1.17-2.09)	2.14 (1.46-3.16)		2.87 (1.73-4.82)	6.75 (2.42-17.85)	
Domestic violence						
No	-	-	-		-	
Yes	2.20 (1.58-3.03)	1.78 (1.15-2.73)	1.74 (1.24-2.43)		3.79 (1.59-9.04)	
Previous mental disorder						
No	-		-	-	-	-
Yes	1.49 (1.11-1.99)		9.73 (7.32-13.05)	1.70 (1.02-2.81)	2.26 (1.04-4.90)	3.40 (1.83-6.39)

Model 1: Students.

Model 2: Professors and Staff.

a: Estimates are adjusted for gender, age, and educational levels, where indicated.

Goodness of fit:

Model 1: For Alcohol: X2 < 0.0001; For Tobacco: X2 < 0.0001; For Medical drugs: X2 < 0.0001; For Illicit drugs: X2 < 0.0001

Model 2: For Alcohol: X2 = 0.002; For Medical drugs: X2 < 0.0001

Source: Author

CONCLUSION

The present study suggests that quarantine and social distancing measures had a significant impact on the initiation of psychotropic substance use. Several individual and social factors were associated with this behavior during the pandemic, such as living arrangements, emotional distress, and social isolation. Notably, the results revealed that emotional vulnerability, financial hardship, and exposure to domestic violence also contributed to increased risks, indicating that substance use during crises cannot be explained solely by individual choice but must be understood as a response to broader psychosocial stressors.

These findings highlight the importance of considering both psychosocial vulnerabilities and contextual stressors in the development of prevention and health promotion strategies. From a public health perspective, interventions should integrate mental health promotion, socioeconomic protection, and community-based support to address the multiple dimensions of vulnerability identified. Strengthening mental health services, expanding psychosocial support, and ensuring access to reliable health information are essential to mitigate the risks of initiating or escalating substance use in future public health emergencies. Furthermore, building resilient health systems and fostering intersectoral collaboration will be crucial to prepare for potential future crises.

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Submitted: December 17, 2023

Accepted: October 9, 2025

Published: March 2, 2026

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All authors approved the final version of the manuscript.	
Conflict of Interest:	There is no conflict of interest.
Funding:	Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq)

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Editor: Christiane de Fátima Colet. PhD